

REGENERATION OF THE CERCI IN *FORFICULA*
AURICULARIA L.

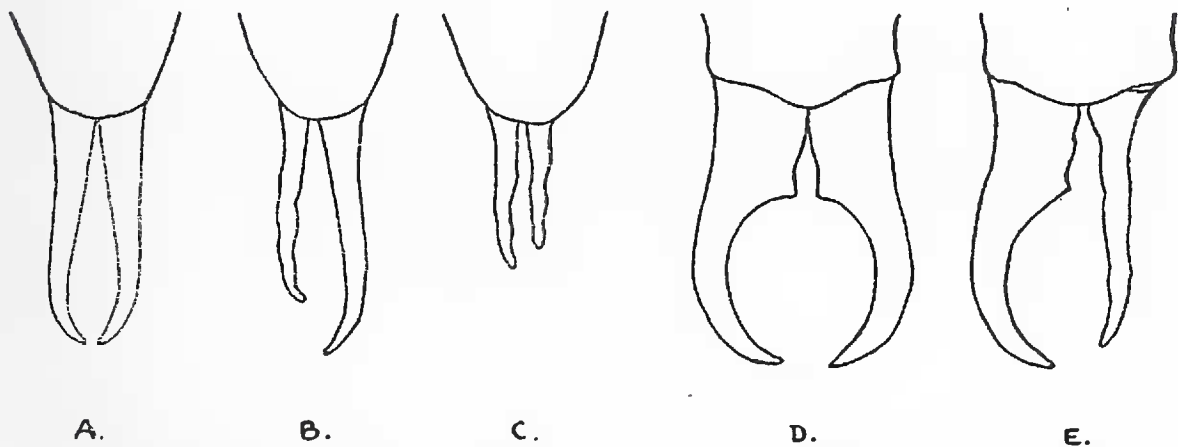
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The discovery of regenerated cerci on the European earwig, *Forficula auricularia* L. was made in a peculiar manner.

While the writer was working in the Earwig Parasite Laboratory in Portland, Oregon, during the summer of 1931, large numbers of earwigs were handled each day during the routine of "hand parasitizing" them with larvæ of the Tachinid fly, *Digonichæta setipennis* Fall.

The "hand parasitizing" procedure used was simple. It consisted of picking up slightly chloroformed earwigs by the cerci with small forceps in such a manner that the earwig might be brought in contact with the parasite *Digonichæta* larvæ contained in small glass tubes. A parasite would almost immediately attach itself to the earwig, which was then removed to a safe container. During this process one or more cerci would often break off, particularly in the case of the last nymphal instar of the earwig when the cerci are more slender and easily broken.

In order that none of the costly parasites be wasted on earwigs which might die as a result of the wound left by the broken cerci, a few of these injured earwigs were kept to see how long they would live. It was found that not only did they all live but that the last instar nymphs during their change to adult grew new cerci to replace the old.



A. Normal female cerci. B. Left cercus of female regenerated. C. Both cerci regenerated. D. Normal male cerci. E. Right cercus of male regenerated.

This was so interesting that a series of experiments was conducted with numbers of the nymphs from which one or both cerci had been removed. Legs and antennæ were broken from other nymphs in order to determine whether they too, might not be regenerated. As previously observed, the nymphs on changing to adults developed new cerci. Legs and antennæ did not grow back. Adults failed to grow new cerci, although two experiments were made to test this point.

The regenerated cerci are not normal but are stunted and malformed. The accompanying drawing compares the normal cerci of male and female earwigs with the regenerated cerci. It will be noticed that the new cerci are much like those of the adult female in that they are fairly straight. This may have been partly the reason for the conclusion reached by Morgan in an article in the Proceedings of the Indiana Academy of Science, Vol. XXXVI, 1926 (1927), pp. 331-333. He believed that these forms which he accidentally discovered, were gynandromorphs such as have been reported from other insect orders.

This conclusion, in view of the above observations and the fact that the regenerated cerci bear little resemblance to the normal female cerci, is probably wrongly drawn.

The writer can make no definite explanation for this interesting growth on the part of nymphal earwigs but suggests that possibly the cerci develop entirely from the chitinous covering which is thrown off during each moult, and therefore grow from the newly developing epidermis. Such a conclusion seems to be borne out by the fact that adults are unable to regenerate the cerci.

ABSTRACT

It has been found that regeneration of the cerci of the European earwig, *Forficula auricularia* L. is not rare. The resulting condition was formerly thought to be gynandromorphic by at least one author.
